

REMARKS

Claims 1-14, as amended, appear in this application for the Examiner's review and consideration. Claims 13-15 have been renumbered as claims 12-14 due to misnumbering of those claims because of the inadvertent omission of claim 12. No new matter has been entered so that this amendment should be entered.

The claims were rejected as being obvious over Dijksman et al. article for the reasons set forth on pages 2-4 of the office action. Applicants traverse the rejection as the interpretation of the term "variety of alcohols" that is set forth in the office action is not supported by that article.

The present invention is directed to a process for the oxidation of an unsaturated alcohol using an oxidant of a hypochlorite salt of the formula M(OCl)_n, preferably NaOCl, in combination with a catalytic amount of a N-(2,2,6,6-tetraalkyl-4-piperidinyl-N-oxyl)-2-amino-1,3,5-triazine compound. This process results in conversion of the unsaturated alcohol into its corresponding unsaturated aldehyde or ketone in high yield.

It is well known to the skilled artisan that unsaturated compounds, in contrast to saturated or benzylic ones, undergo addition reactions in the presence of NaOCl or similar hypochlorite compounds to form chlorinated compounds. In particular, the reactivity of unsaturated alcohols with hypochlorite compounds is sufficiently different compared to that of saturated or benzylic alcohols so that a skilled artisan would not expect the same type of chlorinated compounds to be obtained.

Furthermore, Dijksman et al. specifically mentions only "primary and secondary aliphatic alcohols" (see p. 271, col. 2, start of 1st and last paragraphs), and it can only be these that represent the "variety of alcohols" that are referred to by the Examiner. There is nothing in Dijksman et al. to suggest that the "variety of alcohols" also could include unsaturated alcohols, and applicants note in particular that there is no mention, example or other reference made to them for use in connection with an oxidant of NaOCl and catalyst of a triazine compound.

Applicant does recognize that Dijksman et al. mentions on page 272, col. 1, end of second paragraph, that his process can be used with allylic alcohols (i.e., unsaturated alcohols), but in this case the oxidant is CuCl/O₂ rather than M(OCl)_n or NaOCl as presently claimed. In addition to teaching away from the presently claimed use of a hypochlorite catalyst, applicant notes that the CuCl/O₂ oxidant of Dijksman et al. is

not within the scope of the present claims as it is not a compound of formula M(OCl)_n. Accordingly, Dijksman et al. does not disclose, teach or suggest that hypochlorite catalysts are suitable oxidants for unsaturated alcohols in the presence of a N-(2,2,6,6-tetraalkyl-4-piperidinyl-N-oxyl)-2-amino-1,3,5-triazine compound or a “Tempo” compound.

Other prior art references confirm the latter point. The article by A.E.J. deNooy et al. entitled “On the Use of Stable Organic Nitroxyl Radicals for the Oxidation of Primary and Secondary Alcohols”, a copy of which was previously submitted, does not utilize a hypochlorite oxidant for the oxidation of unsaturated alcohols in the present of a Tempo compound. Instead, hypochlorite compounds are only used with unsaturated or benzylic alcohols (see Table 6 and procedure G). Furthermore, when the starting alcohols possess another group that is capable of reacting with NaOCl (see entry 7 of Table 6), then the end product was not an aldehyde. This does not motivate a skilled artisan to use hypochlorite salt oxidants of the type claimed for the conversion of unsaturated alcohols to their corresponding aldehydes or ketones.

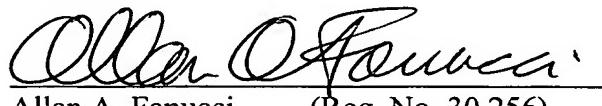
An article by Bohm et al. entitled “Tempo Oxidations with a Silica Supported Catalyst” is submitted herewith as another document that is in accord with the teachings of the deNooy et al. article. Bohm et al. has no disclosure of the use of NaOCl with unsaturated alcohols and all examples using NaOCl are with saturated or benzylic alcohols. This article is listed on the attached form PTO 1449 and a copy is submitted so that it can be made of record by the Examiner. The first page of this amendment authorizes the office to charge any fees for considering this reference to the deposit account of applicant's attorneys. Also, the PTO 1449 form that is being submitted also includes minor corrections to the entries of the articles that were previously considered by the Examiner. An acknowledgement of the items listed on this form by the Examiner's completion and return of it along with the substitution of this form for the one that was previously submitted would be appreciated.

Accordingly, in view of the preceding, it is clear that a skilled artisan would not consider the “variety of alcohols” disclosed to Dijksman et al. to include unsaturated alcohols when an oxidizing hypochlorite compound such as NaOCl is used in combination with a triazine or Tempo type compound as a catalyst. Thus, the obviousness rejection has been overcome and should be withdrawn so that all claims can be allowed. A notice to that effect at the Examiner's earliest convenience would be appreciated.

Thus, the entire application is believed to be in condition for allowance. Should the Examiner not agree that all claims are allowable, then a personal or telephonic interview is respectfully requested to discuss any remaining issues in order to expedite the allowance and granting of this application.

Date: 6/6/05

Respectfully submitted,



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